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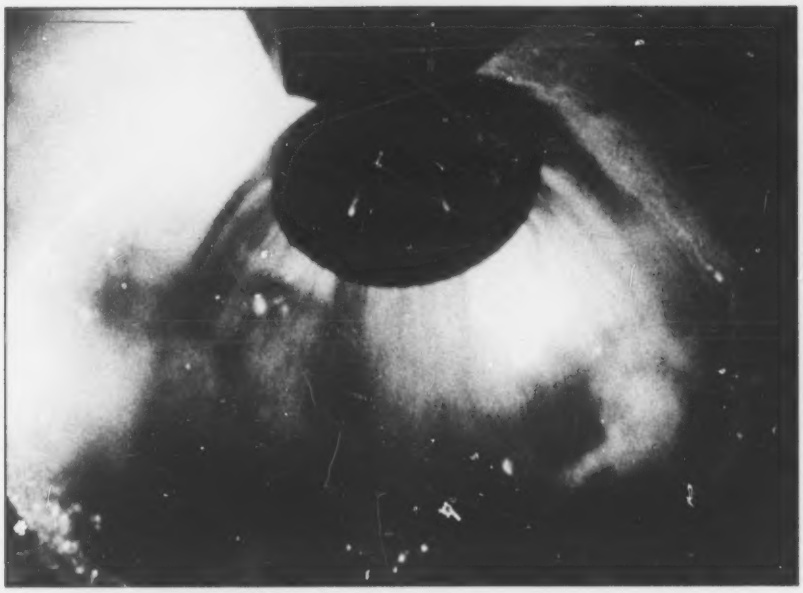
EXAMINING THE ACTIVE STATE OF LADLE METALLURGY

IRON ORE INDUSTRY UPDATE: BATTERED, BRUISED, BUT NOT BEATEN

Plus
IN PLANT SPOTLIGHT
and
THE HOT SPOT DEBATE

MARCH 19, 1984 VOL. 227, NO. 6



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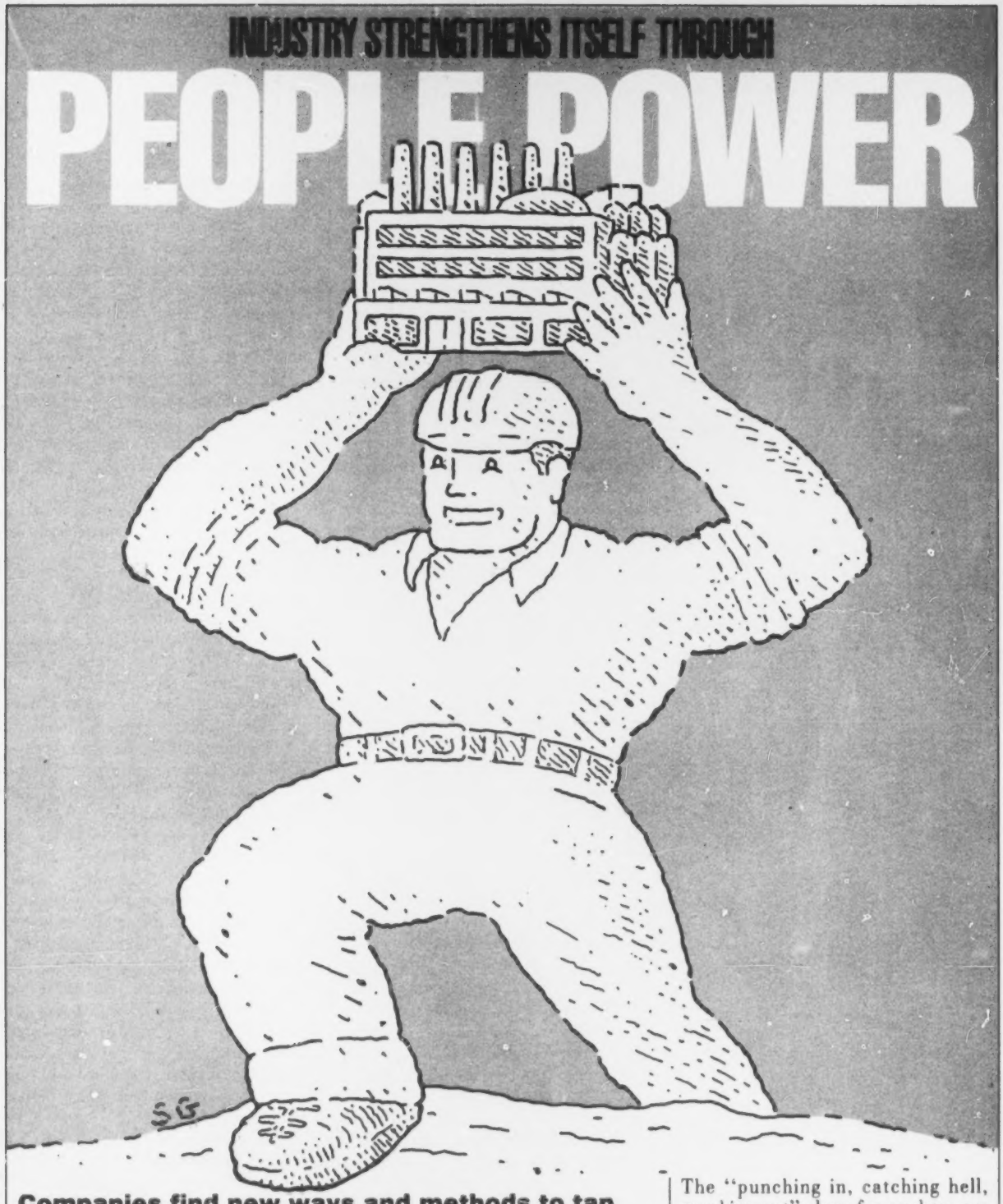
INDUSTRY STRENGTHENS ITSELF THROUGH

PEOPLE POWER



Companies find new ways and methods to tap their mightiest resource—human capital—to become tougher world competitors

BY JOHN D. BAXTER

The "punching in, catching hell, punching out" days for workers are coming to a close in U.S. industry.

And they are coming to a close whether management likes it or not.

Actually, in an increasing number of cases, management is in the forefront of sweeping changes in the way people are being managed.

The awareness of great changes tak-

WORKER CONTROL, TO EMPLOYEE COMMITMENT, IS BEING MADE IN MANAGEABLE STEPS.

ing place in human resources management has not yet reached every executive suite in America. The move, on any sizable scale, is only about 15 years old. And it has been only in the last three years or so, that the movement has clearly gathered momentum.

What is the change all about? What forces are bringing it on?

Call it a Quality of Work Life (QWL) movement. Call it, a new era of 'participative management.' Call it, a new worker 'commitment model.' Those are terms widely used to describe the evolving workplace. There is no one label. It is a change in flux.

If there is one common element in radical workplace change, it is greater worker participation programs in the key decisions that affect and determine day-to-day work patterns.

Workers are taking on the look of 'whole people.' Instead of being viewed by management as hired hands, they are being viewed as creatures with feelings and with untapped capacities to think, to innovate and to make great improvements in the way work is done.

Some of the emerging changes in human resource management include job redesign, personalized work hours, new incentive plans, quality circles and co-management programs.

One seeming certainity is an end to the "punching in and out" environment in American industry. That earlier reference to the punching in comes from a major study of the workplace changes made by researchers at the New York Stock Exchange (NYSE). The reference goes a long way in summing up their marking of a point of change in human relations management in this country.

Not suprisingly, the clearest overview of the new human resource management movement comes from the shores of academia. And from an overview perspective, it can be said that no fad or passing fancy is seen in new industry approaches in managing human capital. The overviewers see the change as a watershed one; they see a new direction.

A New Model

Perhaps no one observer of the emerging changes in people management stands taller in the regard of many professionals in the field than Richard E. Walton of the Graduate School of Business Administration at Harvard University. He has made a clean-cut discernment between the 'old model' and the 'new model' in workforce management in this country.

"There has not been a monolithic model in the U.S. for managing workforces," he said. "But there have been central tendencies.

"The common thrust of the many elements of the traditional model has been to **impose control** in order to achieve efficiency.

"The thrust of the emerging model is to **elicit employee commitment** in order to achieve ambitious end results. The commitment model, properly implemented, is expected to produce higher productivity, better utilization of new technology and greater human development and satisfaction. It also accords more legitimacy to management."

The control model, noted Mr. Walton, was refined and institutionalized over the first half of this century. It is based on subdividing work into small tasks and holding individuals accountable for fixed job requirements.

Mr. Walton has gone on to give a clear picture of just what is covered by the new model, the commitment model.

"In the new model, jobs are defined more broadly, management is leaner and more flexible, ambitious and dynamic performance expectations replace work standards, compensation places more emphasis on learning and collaboration, employees exercise more voice, union-management relations trend toward more mutuality and employment assurance becomes a higher priority policy area."

The reasons for U.S. industry's swing to commitment-style human management is clear enough to Mr. Walton and others in the field.

"The control model," he said, "is now being replaced because of two developments.

"First, it began to break down when employee alienation often became a second order consequence of the control and efficiency measure. Increasingly, these old solutions failed, primarily because evolving employee expecta-

tions were too severely violated.

A New Urgency

A second condition hastened the obsolescence of the old workforce management model.

"The traditional model is capable of operating satisfactorily with moderately low employee commitment," said Mr. Walton. "However, the emergence of foreign competition in several industries and heightened domestic competition in others, set significantly higher standards of excellence."

That second reason noted—crunching world competition—has backed much of U.S. industry into a corner where it must fight back without delay.

It is true, there are a number of reasons why U.S. industry has been taking a beating in world trade in recent years. There are government-subsidized foreign competitors, an over-valued U.S. dollar, government trade disincentives and so on.

But from the point of view of competitive factors that U.S. companies can do anything about, there has been great relative superiority in some other countries in their motivated and committed workforces.

Very simply, American managers have not been getting the most out of their mightiest asset—human capital.

With this recognition and admission by U.S. managers, there has come the very recent drive to fight back by developing an equally motivated and committed workforce.

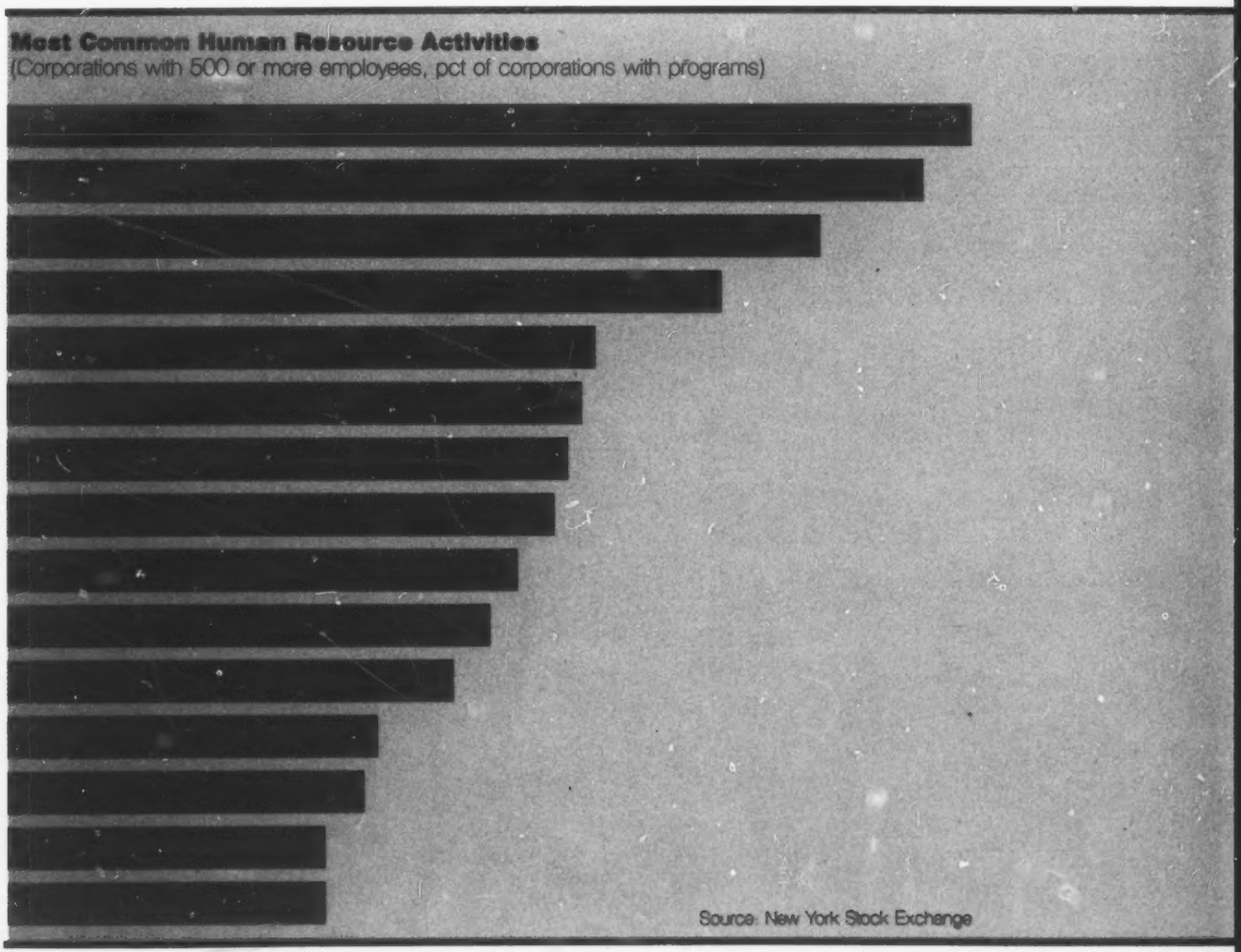
The fighting back is underway.

For example, at General Motrors' annual corporate planning conference last year, company president F. James McDonald sounded a ringing mandate to the attending top managers.

"Make QWL real, relevant and permanent in your organizations. Every manager in General Motors must get squarely behind QWL, and it must be done now. All GM executives must make this a key part of their operating plans—and insist on the same with their subordinates."

GM already has some plants operating that are widely considered to be models of the commitment type of people management.

It is true it is large corporations, like GM, that are leading the way in moving to the new 'commitment' approach in


Most Common Human Resource Activities
(Corporations with 500 or more employees, pct of corporations with programs)
Source: New York Stock Exchange

managing employees. But still, the movement has breadth to it.

Dr. Walton has said that in 1970, only a few plants in the U.S. were getting into the new type of workplace management.

"By 1975," he added, "hundreds of plants were involved. Through 1980, I estimate there were at least a thousand plants undertaking the comprehensive change limited to a few in 1970."

The Right Target

Workplace analysts warn that recent and current industry efforts to get wages and benefits pushed down are not a substitute for changes in the workplace as far as competitive strengthening is concerned. The real end of workplace changes is higher productivity.

"This matter of productivity is rarely touched on in news stories; the focus is always on wage rates and benefits," said Woodruff Imberman, a top labor relations consultant.

"This is mainly due to the fact that the dollars and cents are dramatic, productivity is not," he added. "But this is where the real story about labor costs and foreign competition comes in.

"It is higher productivity (which lowers labor cost per unit) that enables the Japanese to sell a small car or a pickup truck for $6500 when a similar American car sells for $8500. The same applies to a television set, a computer, a machine tool and so on."

Mr. Imberman is the president of Imberman & DeForest, Inc., Chicago.

While many U.S. managers are facing up to the need for radical workplace changes, many others are not. In fact, most managers apparently feel they face a deeply-entrenched negative work culture in any efforts they might make to utilize human resources as effectively as foreign competitors.

This belief shows up in an extensive survey by the pollster-consultant firm of Yankelovich, Skelly & White. This survey shows that 87 pct of business leaders believe that "negative work attitudes are an important part of the U.S. competitive weakness."

But those who have been specializing in workplace productivity analysis say that management belief is unfounded.

Satisfiers vs Motivators

There is a difference.

Extensive research by the National Science Foundation, the Public Agenda and other leading sources, shows there are steps managers can take for employees that can make those employees happier and more content on their jobs. These are known as satisfiers.

But . . . there are other steps managers can take that result in more efficient and more productive workers. These are known as motivators.

Surveys have found that 75 pct of the U.S. workforce believes that the inability of managers to motivate the workforce is the key reason why people in this country are working less than they could.

Notes consultant Daniel Yankelovich, "The lesson is clear: If managers want to capitalize on the considerable human potential that already exists in the workforce, they must focus on motivation as well as satisfiers and not confuse the one with the other."

The figures in the table represent the percentage of mentions by surveyed workers. All factors listed are mixed to some degree as to motivating or satisfying. But the predominant thrusts are made clear in the relative percentages of mentions.

Top Motivators	Employee Would Work Harder For	Makes Job More Agreeable
Good chance for advancement	48 pct	22 pct
Good pay	44	28
Pay tied to performance	42	31
Recognition for good work	41	35
Job enables me to develop abilities	40	26
Challenging job	38	30
Job allows me to think for myself	37	33
A great deal of responsibility	36	39
Interesting work	35	36
Job requires creativity	35	31
Top Satisfiers		
Good fringe benefits	27	46
Fair treatment in workload	24	46
Being informed about what goes on	20	50
Flexible work pace	19	49
Get along well with supervisor	18	52
Flexible working hours	18	49
Working with people I like	16	54
A job without much rush and stress	14	61
Convenient location	12	56
Workplace free from dirt and noise	12	55

"Our competitive position is slipping," said Charles Rourke, a management consultant in the field, "because American managers have let American workers down, not the other way around."

Mr. Rourke is president of New England's Hendrick & Co.

Too, a series of in-depth research studies by Daniel Yankelovich show that "the work ethic still thrives in this country."

Noted Mr. Yankelovich, "One does not have to search for explanations beyond the workplace for why Americans, by the millions, have chosen to hold back from making a full-hearted commitment to their jobs.

"The explanation lies squarely within the workplace itself: The cause of low commitment is faulty incentive systems and flawed management practices."

Mr. Yankelovich added that surveys show that 76 pct of workers said they "could, and would be, more effective on their jobs—if they were motivated to do so." (See copy box on Satisfiers and Motivators).

So, U.S. managers can't blame a dying work ethic for their world-competitive lag in utilizing people power. The work ethic here, surveys show, is as solidly in place as anywhere else.

Easy Entry

A company can make the move from workplace control to employee commitment approach in manageable steps.

For one thing, few changeovers from the old to the new style are company-wide in scope. Often, the transition is not even plant-wide in scope. At the outset, few employees are likely to be involved.

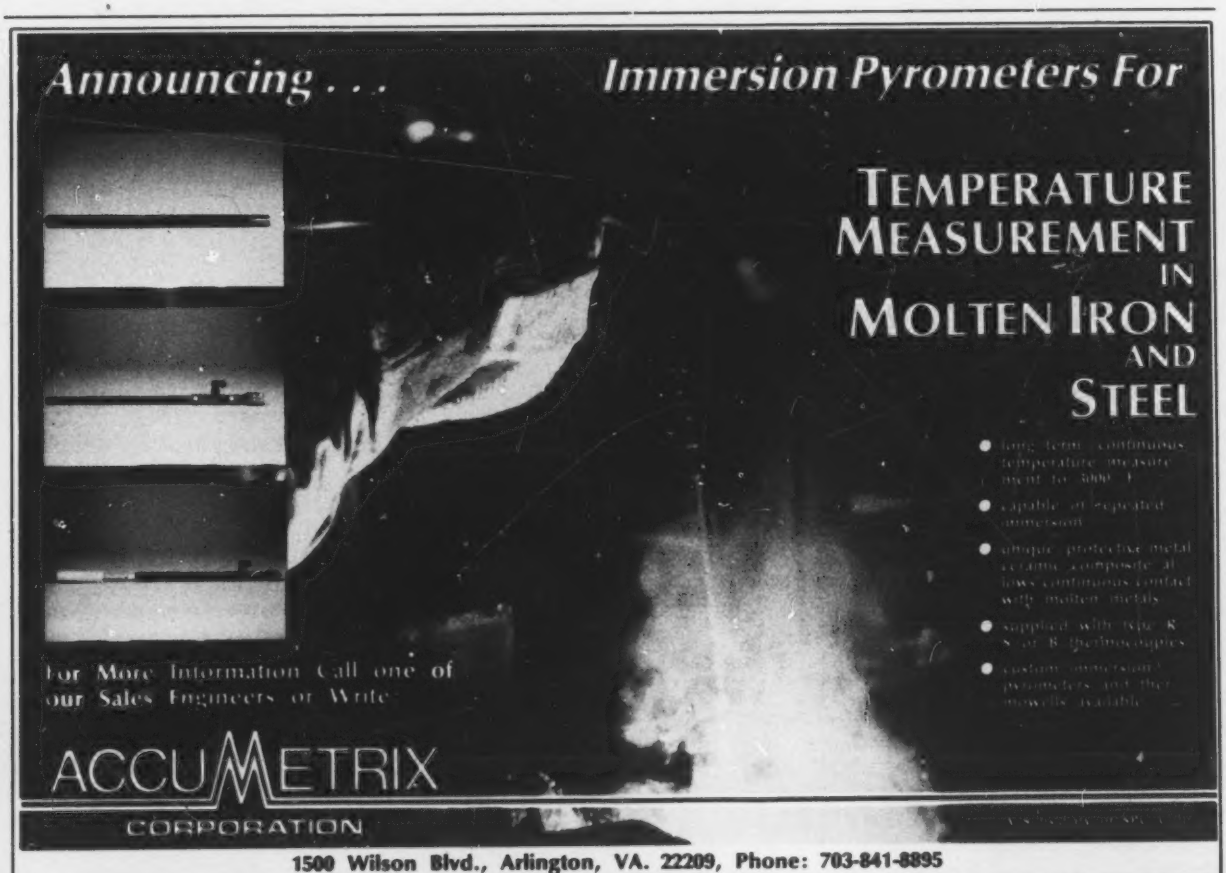
Mr. Walton, who has hands-on experience with commitment-type programs in companies, has noted, "The cornerstone of the transitional model is the involvement of employees in problem-solving groups. Such groups have many names including quality circles."

Actually, there are two types of group, or team, approaches used in workplace management. One is the problem-solving team as noted by Mr. Walton. The other is the work, or task, team. Participation on teams is voluntary on the part of workers.

The setting up of a problem-solving team does not affect the existing work organization in a plant. In such a team setup, employees working on a given operation are given relative autonomy in devising ways to improve that operation in just about any of its aspects.

The improvement goals of a team can be speedier production, improved product quality, cost reductions and so on. The team then 'sells' the proposed changes to management.

The work team, on the other hand, is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comprised of workers with various skills and specialities organized to serve as an actual producing unit. In time, all members of such teams are trained to perform any and all jobs within the production unit. Too, members of the teams at any one time work at the skill or speciality that is needed to optimize production in their work area. Team members are usually paid at their highest skill rating regardless of the time they actually work at that skill level.

Work teams, unlike problem-solving teams bring change to the organization of work in a plant. They are usually not a starting point in any company's commitment to changes in the workplace. Such teams are in action throughout companies of the caliber of TRW Inc. and Hewlett-Packard.

One company that has had success with employee problem-solving teams is Jones & Laughlin Steel Corp. John H. Kirkwood, formerly vice president of Industrial Relations at J&L, said that documented cost savings of $9 million were made in a single years' time through use of such teams. At the time the savings were made, the worker participation program was in place only two years and relatively few employees were on teams.

Mr. Kirkwood, who had started the teams at the steel company, very recently left J&L to head up his own firm, Kirkwood Consulting Associates, Inc.

"There are many problems," Mr. Kirkwood told *Iron Age*, "that basic industries such as steel and autos can do little about—foreign competition, cost of energy, costs of many raw materials and so on.

"But one key area that is within their control is the effective use of their employees to improve productivity and product quality."

Mr. Kirkwood sees the employee team approach such as at J&L, and the entire new employee participation movement, as "the emerging people management strategy that companies—especially those in basic industries—have to turn to. Those that do not, will be at a competitive disadvantage in the marketplace."

In the face of all the hard reasons for, and the big payoffs, in managing people in the new ways, the movement will probably expand mostly because the philosophy of American managers is changing.

The New York Stock Exchange study, after polling the many companies as to why they set up human resources programs, summed up: "The most striking response, and perhaps the one of mosty fundamental significance, is the acknowledgment of a change in management philosophy."

The new philosophy may be more humane than the old authoritarian one. But still, it has a practical basis to it.

This idea was expressed clearly by Don M. Decker, Dana Corp. public relations director, at a recent Conference Board meeting on Work Innovations in a Restructuring Economy:

"From a cold, objective, pragmatic business approach, it doesn't make any sense to hire 'part of a person' and that is exactly what we are doing when we hire only a person's strong back. The most valuable part of an employee is his or her ability to think—to be creative—to be innovative—to question—to challenge.

"When we don't use these assets, we are doing ourselves, our company and our employees a disservice." □

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Do's and Don'ts on Improving Job Performance

In-depth research shows that the work ethic still thrives within the ranks of U.S. workers. Research also shows that the main block to expression of this work ethic in terms of improved job performance is the failure of management to unleash it.

Based on the research, here are critical do's and dont's intended as a guide to management in stimulating and enhancing the work ethic.

The list and explanations that follow was compiled by consultant-pollster, Daniel Yankelovich and Prof. John Immerwahr of Villanova University.

Do tie remuneration directly to performance that enhances the efficiency and effectiveness of the company.

Do give public and tangible recognition to employees who maintain standards of quality and make an effort that exceeds average satisfactory job performance and achievement.

Do accept wholeheartedly the principle that employees should share directly and significantly in overall productivity gains (however defined).

Do encourage jobholders and the workforce to participate with management in defining recognizable goals and standards against which individual performance can be judged.

Do give special attention to the difficulties that middle managers face in supporting and enforcing programs to restructure the workplace.

Do Not permit situations to develop where the interests of employees run counter to the well-being of the company—e.g., by introducing new technology in a way that threatens employees' job security or overtime.

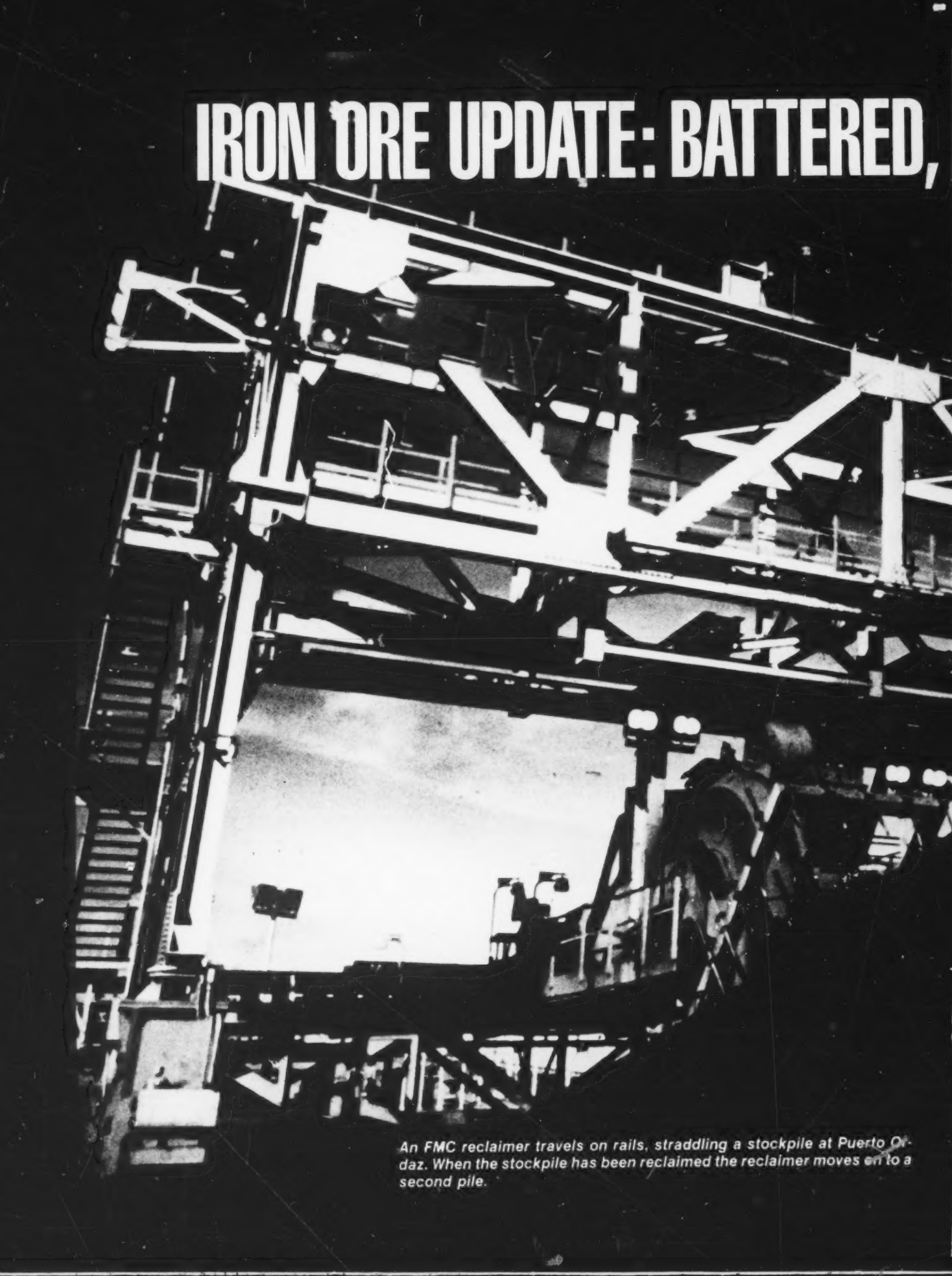
Do Not attempt to improve standards of quality unless you are prepared to accept its full costs—e.g., discarding substandard products, paying more for better components or transferring or dismissing employees who cannot perform to high quality standards.

Do Not permit a significant gap to develop between management rhetoric and the actual reward system—nothing feeds employee cynicism as much as management blindness, or insincerity about what forms of behavior really "pay off."

Do Not pretend that programs designed to increase productivity are really intended to enhance job satisfaction and the dignity of work.

Do Not support special privileges for managers that serve to enhance the status of managers by widening the gap betwen them and those who do the work—e.g. giving bonuses to managers at the same time that employees are being laid off.

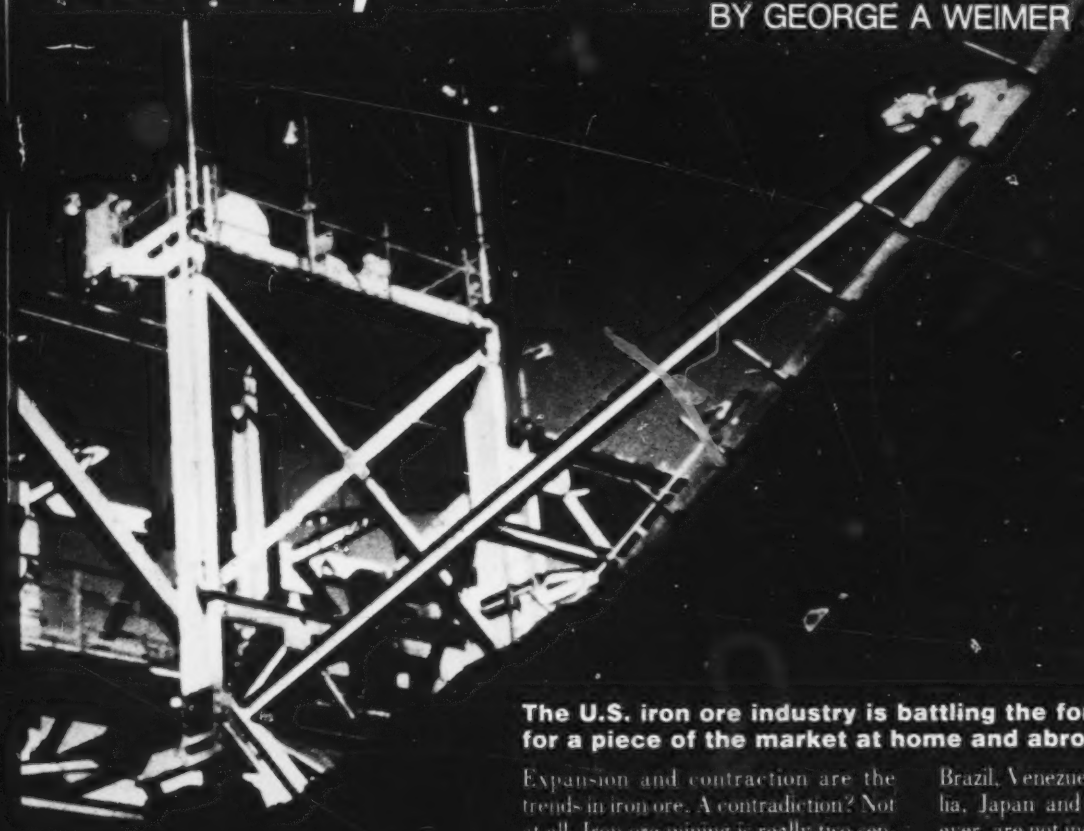
IRON ORE UPDATE: BATTERED,



An FMC reclaimer travels on rails, straddling a stockpile at Puerto Ordaz. When the stockpile has been reclaimed the reclaimer moves on to a second pile.

BRUISED, BUT NOT BEATEN

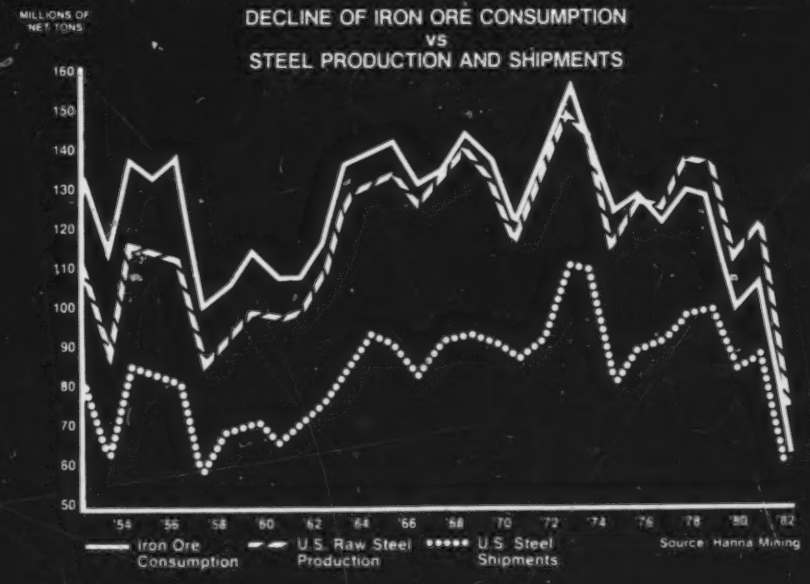
BY GEORGE A WEIMER



The U.S. iron ore industry is battling the foreign competition for a piece of the market at home and abroad.

Expansion and contraction are the trends in iron ore. A contradiction? Not at all. Iron ore mining is really two separate industries. One is the Great Lakes iron ore business. The other is the world which moves on the high seas between Brazil, Venezuela, and Europe, Australia, Japan and Korea. The two, however, are not insulated from each other.

For world iron ore, the trend has been expansion for many years. For the Great Lakes, the trend will continue



due to contraction in North American steel. Whether the world situation continues to be characterized by expansion depends more on politics than economics. In Carajas, Brazil, for example, some 15 million new tons of high grade ore capacity will come onstream even though there's a glut.

This is happening, "because Venezuela wants expansion, period, with or without market justification. They'll price accordingly," said one expert.

Meanwhile, the Upper Peninsula of Michigan and Minnesota are experiencing a severe contraction.

"We are in a period of contraction in basic industries. One reason, of course, is the tremendous increase, since 1973, in the price of oil," said Hanna Mining Co.'s general manager of sales Alan Polansky.

Prior to 1973, we "built a terrific expansion in basic industry with cheap oil. Now we're in a less-is-more philosophy mode. The terms today are value and quality," said Mr. Polansky.

"We are undergoing a fundamental change in our society. There's a transition going on and a different kind of economy is emerging. Basic industries will be restructured smaller," he added.

But, what if other experts are correct in predicting a steel capacity shortage in a few years? Is the U.S. iron ore industry overreacting? "I don't think so. There's a huge oversupply in terms of both steel and iron ore in the U.S. There will not be a shortage of iron ore," Mr. Polansky said.

Unfortunately, "the vast majority of iron ore producers are owned or controlled by governments," he noted.

Fortunately for American iron mining companies, foreign ore is a matter of high grade and is not suitable for American blast furnaces.

While foreign ore is very high grade, often above 66 pct iron (Michigan taconite, for example, is only 27 pct iron and must be beneficiated), the real threat to U.S. miners comes up a step in the value added hierarchy.

A report in 1978 called "Steel at the Crossroads," said the U.S. steel industry needed $7 billion annually to modernize. "They spent it wrong," said Thomas E. McGinty, president, Belvoir Consultants, Inc., Shaker Heights, Ohio. "They never modernized their finishing. They weren't market oriented. They modernized iron ore, blast furnaces, BOF's and so on, but not finishing. As a result, steel is buying slabs or hot-rolled bands. That's a real trend."

That "real trend" towards imported semifinished steel is a major threat to steel's two biggest suppliers, scrap and iron ore.

The basic problem, according to Mr. McGinty, is iron ore people must now solve, is not foreign ore or foreign slabs. "The whole problem starts with the steel wage increase of 1971. Costs have simply gone up faster than prices would allow."

"We must get our costs down," said Frank S. Forsythe, executive vice president, Cleveland-Cliffs Iron Co.

But, a further problem, as alluded to by Mr. Polansky, is the nature of the rest of the iron and steel business outside the U.S. "Brazilian iron ore is not, presently, an imminent threat. But, I know they're calling on all major steel companies here and in Canada. It's going to be dumped, in my opinion," said Mr. Forsythe.

Government Sponsorship

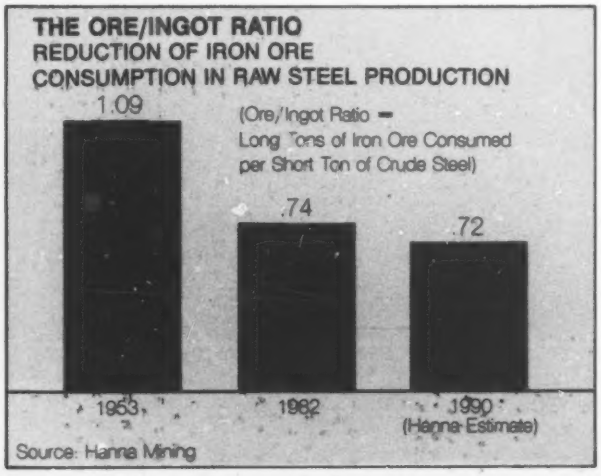
Various, huge government sponsored projects all over the world, but particularly in Brazil, Venezuela, Australia, and India, are expanding far faster than Great Lakes based mines are contracting.

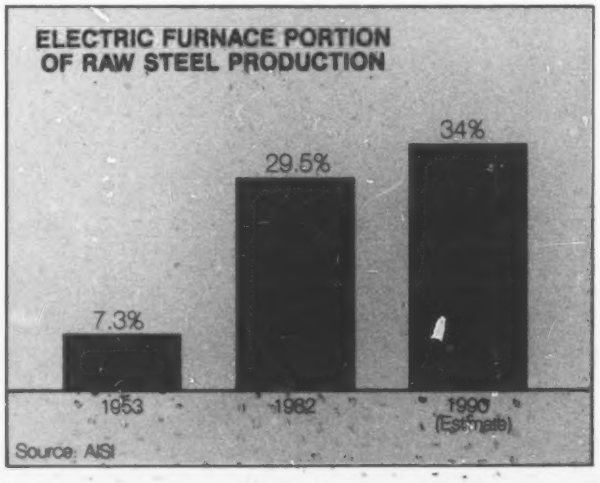
One of the world's great iron ore stockpiling and shiploading facilities is at Puerto Ordaz, Venezuela. In 30 years this port is said to have handled some 400 million tons of ore. It can ship out, by water and rail, 24 million tons a year.

The port facility began operations in 1954, bringing the world high purity iron ore from a newly-found "mountain" of ore in an area of Venezuela.

The system now has 148 conveyors. It can store more than 3 million tons of ore on the ground at one time. It can load a 65-car train in 24 minutes or pour 80,000 tons of ore into a ship's hold in 12 hours.

But the foreign project most discussed is in Northern Brazil and is called Carajas. This project sits on top of what is probably the largest single deposit of high grade ore in the world. Reserves in the Serra dos Carajas range are estimated to be in the area of 1.8 billion tons of ore with average iron





content of 66 pct.

The project is part of Brazil's long-range plans to develop the Amazon basin and is run by the Cia Vale do Rio Doce (CVRD), the state run mining corporation. It is important to note that Brazil, now in debt to the amount of $80 billion, receives the largest part of its foreign exchange from iron ore. As Mr. Polansky puts it, "all of the Third World countries are trying to get rich and they will continue to produce even during recessions."

Carajas will be producing in 1985.

Brazil's total reserves are in the neighborhood of 85 billion metric tons and have earned the country $1 billion or more annually for decades. Obviously, that country will remain one of the giants in iron ore for decades to come.

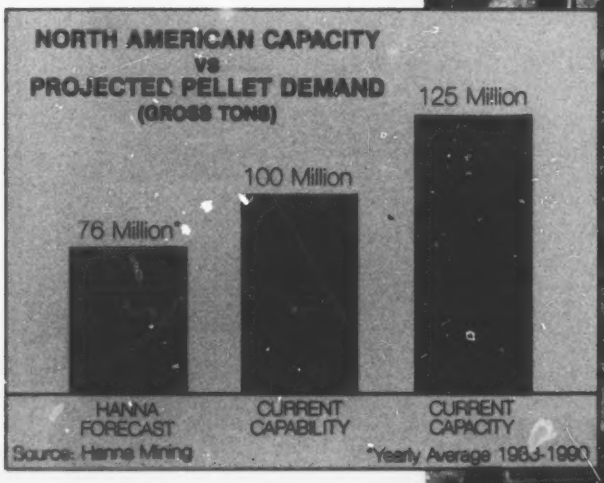
Australia is also blessed with huge deposits of iron ore, much of it contracted to Japan.

"Although business in the United States is now showing some improvement with mines reopening and the workforce being called back, the doom sayers have not been quieted. There are many still sounding the death knell of the industry," said Robert McInnes, president and chief executive officer, Pickands Mather, to the Minnesota section of American Institute of Mining Engineers (AIME).

Different Shape

"The iron ore industry has over-

Iron ore at Puerto Ordaz is brought in from Cerro Bolivar in unit trains and then unloaded by a rotary railroad car.



come adversity many times in the past. It can and will do so again in the future. However, its shape and structure will be different than in the past or is now.

"Today, pellets represent about 97 pct of total shipments from the Lake Superior region; a complete turnabout in 30 years. The industry's propensity to adapt to change should not be lost on our competition or our customers. We are more forward thinking and much more technologically directed than most casual observers might realize.

"The Lake Superior iron ore industry is modern with much of it built or renewed during the past 15-20 years," Mr. McInnes said.

In the late 1960's and the early 1970's, a feeling of optimism widely prevailed. Few questioned forecasts that steel would experience substantial growth in the decades ahead.

"Forecasts of 5 pct per annum growth were common. The tenor of the times and outlook of the mills was decidedly bullish, and it was wonderously clear that more pellet capacity would be required.

"So, in the period 1965 until today, a vast expansion in capacity of Lake Superior pellet plants took place. Eight new operations were begun. Expansions were put in place before their initial construction was completed. The increased tonnages were dramatic. In 1965, pellet capacity was 27 million tons. By 1983, capacity had grown to 86.3 million tons," said Mr. McInnes.

The only problem was that anticipated growth did not occur. "In fact, today the steel industry is in a state of contraction. The reasons are many. They include subsidized steel imports, aging steelmaking facilities, substitute materials, excessive labor costs, and a mature economy.

"And while these problems are affecting our biggest customer, the iron ore industry is being impacted by many other conditions. Installation of continuous casting, low cost subsidized imports and growth of electric furnace use are just some," Mr. McInnes said.

He is pleased with, and strongly supports, the steel industry in its rapid move into continuous casting, but the simple fact is that the process results in 10-15 pct less iron ore usage. "That's because strand casting increases the yield of finished product from a specific quantity of raw steel.

"Importation of subsidized or low cost foreign iron ore is, without question, one of the threats our industry faces both now and in the future. How we meet that threat could well determine our survival," he said.

In 1983, the U.S. steel industry had a capability to produce 149 million tons of steel, of which 92 million tons was blast furnace/BOF origin. It actually produced in 1983 just over 83 million tons of steel, of which 52 million was blast furnace origin.

Next Five Years

"Over the next five years, we anticipate the steel industry capability will be reduced to 125 million tons of raw steel, of which 73 million tons will be blast furnace/BOF origin."

Pickands Mather estimates that at today's steel industry operating levels, there is approximately 40 million tons of excess pellet capacity. "I don't have to tell you the implications of that overhang coupled with a smaller steel industry and new off-shore iron ore capacity coming on line," said Mr. McInnes.

While iron ore management must assume much of the responsibility for cost control, "which, frankly, means cost reduction," there are also a number of outside influences.

"Take, for example rail freight costs. In Minnesota, we are looking at a cost of over $5.00 per ton of pellets. In Michigan, the comparable numbers are only about $2.50."

Iron ore mining and processing in the Lake Superior district is energy intensive.

Energy costs since 1972 have risen about 244 pct and, for most operations, are one of the largest single cost components to produce a ton of pellets.

"Our challenge in the next several years will be to continue to develop alternate, less expensive forms of energy and make some further breakthrough in reducing our energy needs.

"Our labor costs are high, perhaps the highest in the world. There were times when we could be proud of that fact, but the point is that these labor costs are a part of the problem now making us non-competitive. Management, with union cooperation, is addressing that problem in every possible way through job combinations, more effective scheduling and other actions."

Another industry leader, Robert F. Anderson, chairman and president, Hanna Mining Company said, "The shrinking steel industry hasn't been the only problem facing domestic iron ore producers. Technological changes also have eroded the market for iron ore."

The ore-to-ingot ratio has fallen some 30 pct in the past three decades.

The growing use of electric furnaces, which use scrap metal instead of iron ore, "also has eroded our market," Mr. Anderson said.

But one of the greatest problems we face is imports on several levels. "First, we are facing a tremendous flood of imported finished goods that contain foreign steel. Foreign cars, for example, captured a record 28 pct of the domestic market in 1982 and "probably would have increased that share last year but for the voluntary restraints accepted by the Japanese," noted Mr. Anderson.

Second, "we face a virtual tidal wave of imported steel, which captured over 20 pct. of the domestic market in 1982 and 1983.

"Finally, domestic iron ore producers face a direct import threat from overseas producers who have significantly lower production costs and higher quality ore deposits."

Unfortunately, "we don't foresee much improvement for the domestic steel or iron ore industries. Presently, we're expecting North American steel mill shipments to average only about 95 million tons a year through the end of the decade. And that includes Canadian shipments."

Based on this projection, "we have calculated that iron ore pellet demand will average only 76 million tons a year through 1990. And that's assuming we won't see substantially increased imports of either semi-finished steel or iron ore," he predicted. □

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DETROIT FORCES THE ISSUE IN GALVANIZING

Auto demand pushes steel producers into new projects. National Steel to invest $70 million in a new electrolytic line.

BY GEORGE J. MCMANUS

In December 1983, General Motors Corp. summoned producers of galvanized sheet to Detroit.

"They've asked everybody to give them a one-hour presentation," said James V. Sprong, director, new product technology, Jones & Laughlin Steel Corp.

Speaking in November, Mr. Sprong explained that this would be on, "what do you think will be required for the automotive industry for 1987 models and beyond? What kind of equipment do you need? Do you have it? When are you going to have it? What is going to be the capacity?"

For 1987 models, which will start rolling off lines in 1986, General Motors and the other auto companies are thinking in terms of extensive guarantees against corrosion. As a means of providing corrosion protection, the automobile companies want a coated sheet that is paintable, weldable and formable.

The best answer to these requirements seems to be electrolytic coating with zinc or some combination of protective agents. Most of the galvanizing capacity in the U.S. is of the hot-dipped variety.

All of which helps to explain the rush of sheet producers into electrolytic galvanizing. The latest move came February 27 when National Steel Corp. announced a $90 million program that will include a $70 million electrolytic line at Great Lakes Steel. The new galvanizing line will be able to produce 400,000 tons a year.

Shortly before this—on February 20—Bethlehem Steel Corp. revealed plans for converting a tinning line at Burns Harbor to electrogalvanizing.

On February 7, Wheeling-Pittsburgh Steel Corp. and Nisshin Steel Co., Ltd., of Japan announced that they were joining in a $40 million venture for coated steels.

On January 18, Bethlehem and Inland Steel announced that they were joining in a development program for electrogalvanizing sheet.

In short, steel companies aren't allowing much grass to grow under their feet. On December 15, National said it was installing prototype electrolytic lines at Midwest Steel. A little over two months later, National was going ahead with a full scale commercial installation.

In explaining why all the hurry, National indicated the auto push for corrosion protection will call for a lot more galvanizing capacity. The auto requirement was seen going from 1.5 million tons a year to 3 million tons by 1987.

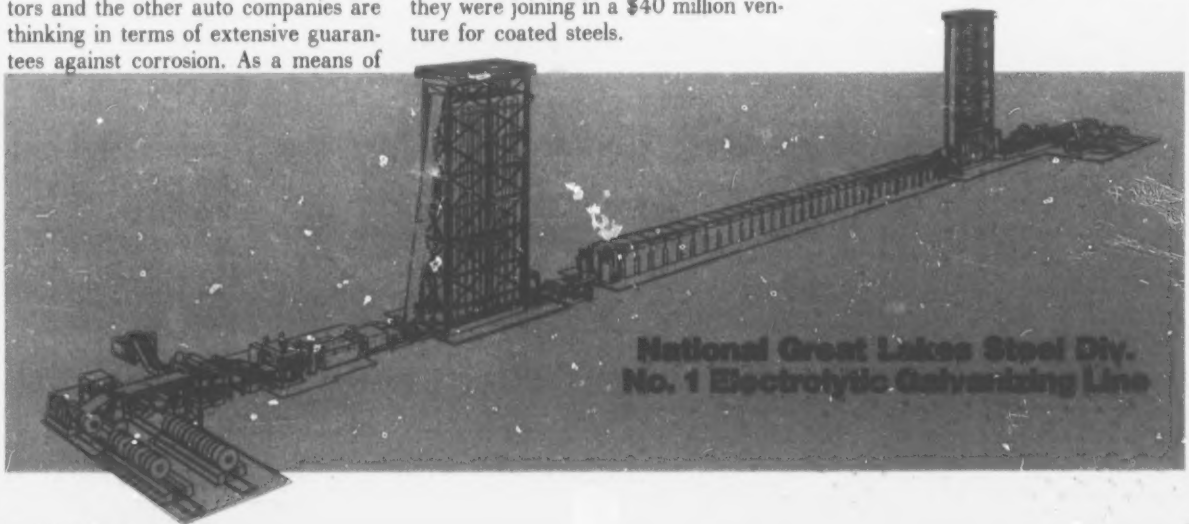
Breakthrough

"We are on the threshold of a materials use breakthrough in the automotive industry," said J.D. Turner, vice president for marketing and sales at National.

With regard to the kind of capacity needed, National noted that the auto companies were shooting for 10 years protection against perforation corrosion and five years protection against surface corrosion.

"We believe the galvanized steel that will be produced on our new electrolytic line will help our customers meet those goals in the most cost-effective way," said Robert D. McBride, president of National Steel.

For long-term corrosion resistance, the auto people want a sheet with a protective coating on both sides. That means the coating on the outer surface



must be smooth enough to provide a good base for painting. The electrolytic process gives the desired surface.

"This process will produce coated steels with surface qualities (smoothness and paintability) equal to the current Class I Critical Exposed automotive cold rolled steel, which is the industry standard," said James Howell, engineering vice president for National.

The auto people want good forming properties. Many of the hot dip galvanizing lines now in use have continuous annealing as part of the coating process. The continuous heat treatment produces a relatively stiff sheet. There are ways of imparting ductility but they add to cost.

In the electrolytic process, there is no heat treating. The steel retains the forming properties imparted by earlier annealing.

"The formability of the coated steel will be at least equivalent to the best steels now available," said Mr. Howell.

A final requirement of the auto industry is weldability. The electrolytic process can minimize welding problems by applying a thin coat of zinc. National's line will have a high degree of flexibility. It will be able to apply different coating weights on the two sides of a sheet. It can leave one side bare.

The line will be able to apply alloy coatings. It will be possible to apply layers of different coatings. Maximum width will be 72 in. Startup is expected to be in December 1985.

Bethlehem will go up to 48 in. on the tinning line being converted at Burns Harbor. The conversion is due to be completed by the first quarter of 1985.

"The conversion of the line will allow Bethlehem the opportunity to begin responding to automotive's stated needs

Body and Chassis Components Corrosion Protection

Source: National Steel Corp.

Net Shipments of Hot-Dipped Galvanized Sheet

Millions of Net Tons

Year	Tons
1983	5,793
1982	4,878
1981	5,375
1980	4,787
1979	5,810
1978	5,889
1977	5,293
1976	4,914
1975	3,537
1974	5,772
1973	6,515
1972	5,196

Shipments of Galvanized Sheet & Strip to Automotive Industry

Millions of Net Tons

Year	Net Tons
1982	1,250,531
1981	1,239,015
1980	1,028,257
1979	1,400,550
1978	1,524,993
1977	1,294,210
1976	991,150
1975	656,769
1974	852,136
1973	1,075,056
1972	900,112

Source: AISI

on a prompt basis," said James G. Van Vliet, general manager of marketing. Both one-side and two-side coatings will be provided, said Mr. Van Vliet.

The joint development project of Bethlehem and Inland reflects the fact that both companies are operating continuous heat treating lines. These are separate facilities, distinct from the continuous annealing systems that are part of many galvanizing lines.

The continuous heat treating lines were installed primarily for high strength sheet. Electrolytic coating ties in nicely with the high strength sheet because it is a cold process and has no effect on mechanical properties.

Delayed Programs

Uncertainty about the kind of coating to be used is causing some mills to delay electrolytic programs. In Japan, Nippon Kokan is using its NKK-EGL process to apply zinc, zinc-iron, and iron nickel coatings. NKK began supplying sheet with the zinc-iron coating to Toyota Motor Co. in September of last year.

Nippon Steel Corp. said its LCC-H process was capable of producing zinc and zinc alloy coatings on one side or both sides. This process is of interest because Nippon Steel is a large stockholder in Nisshin Steel, which is joining in the Wheeling-Pittsburgh coating project.

The electrolytic process is flexible, but according to one engineer, the design is influenced by the type of coating preferred by the customer. If zinc iron is favored over pure zinc, it will make a difference, he said.

One-side coating is still very much in the picture, although auto usage probably won't be as great as was once expected. United States Steel Corp. is using its carrousel electrolytic process for coating one side. Armco has developed its meniscus process.

Kawasaki Steel Corp. has developed a one-side hot dipped method which employs a glassy inhibitor on one surface. Made of liquid glass and magnesium oxide, the inhibitor is washed off after coating.

At the 1983 AISE meeting, a one-side coating technique was described by officials of Mannesmann Demag and Hoesch. This employs roll coating under an inert atmosphere. A spangle-free coating is obtained through the use of zinc with a very low lead content.

It was of some interest that National Steel turned loose a $90 million program with the acquisition by U.S. Steel still pending. The selection of Great Lakes as the site for the electrolytic line was logical enough. Great Lakes is next door to the auto companies.

In the past, however, National has done all its galvanizing at Midwest Steel (except for Weirton). The prototype work is being done at Weirton. Whether this has any bearing on the proposed acquisition remains to be seen. □

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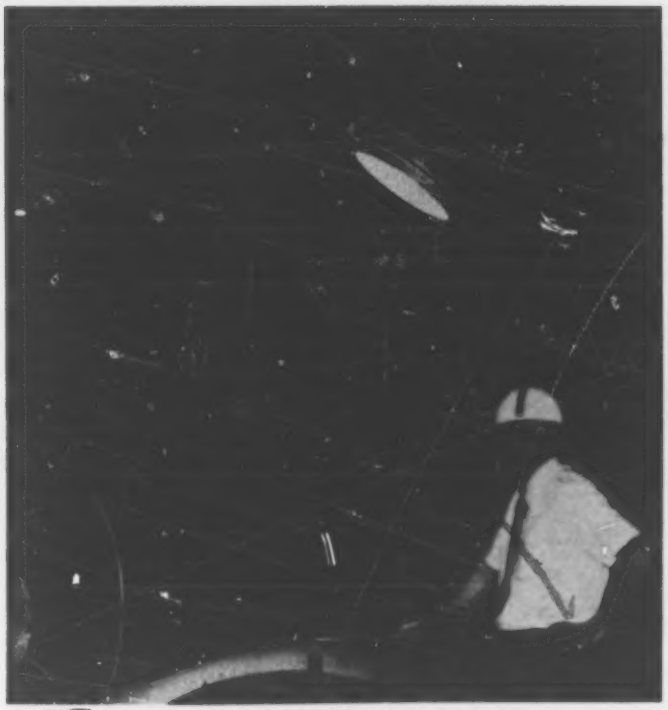

Jones & Laughlin's Q.C. Supervisor H.A. "Hap" Pendelton and the Unilux 700 inspection system.

For Information, Circle 159

crease selected by Aluminum Co. of America (Alcoa) and matched by Alcan Aluminum Corp.

The only "tier" remaining is the one on which Japanese canstock suppliers price their offerings on the U.S. market. These were expected to be discounted from the higher level established by the U.S. companies.

Can industry sources said the initial reaction to the first Reynolds move was astonishment, particularly in view of the steady disappearance of discounts after the price hike round last August. They said the smaller hike, worth about $150 million, was easier to swallow and the 12-month price guarantees can help it go down.

Aluminum industry analyst John E. Keefe of Drexel Burnham Lambert said the smaller can stock price hikes, which take effect with shipments beginning April 1, "reflects more the coming head-to-head confrontation of Alcoa and Alcan in the RCS (rigid container sheet) market" than the generally cited factors of competitive factors like switches back to tinplate and inroads of plastics. Mr. Keefe said the price moves also reflected Alcoa's determination to demonstrate its leadership.

What happens after the Arco Aluminum rolling mill in Logan County, Ky., wins certification from the canmakers is anybody's guess. The mill, which is a central part of the package that Alcan is seeking to acquire from Arco, has initial capacity of 400 million lbs a year. If even only half that capacity is aimed at the can stock market this year, it bulks large against recent aluminum industry forecasts of canstock shipment increases in 1984.

Coal producers foresee slow, but steady growth

Steady growth is expected in all major coal markets between now and 1995 by the National Coal Association (NCA), but not at the levels previously predicted."

"Under our 'moderate growth case,' total coal consumption grows at an average annual rate of 2.6 pct," said B.R. Brown, chairman of NCA's economic committee and CEO of Consolidation Coal Co.

By the end of 1995 total consumption—domestic use plus exports—could be as high as 1.128 billion tons per year, NCA said. By the end of 1985, the NCA is predicting consumption ranging from as low as 840 million tons to a high of 889 tons.

The association paints three "scenarios"—stagnation, moderate growth and revitalization. Consumption figures vary under each theme.

The outlook, said Mr. Brown, "is based on lower expectations for economic and energy growth, a restructuring of America's heavy, energy-intensive industries, a growing prominence in the economy of less electricity-intensive high technology industries, greater interfuel competition and demographic changes."

Under the NCA's "moderate growth" scenario, total domestic coal consumption will be 765 million tons in 1985, an 8 pct increase compared with 1982. By 1995, under moderate growth, consumption climbs to 995 million tons, 31 pct greater than 1985.

As NCA sees it, electric utilities will continue to be coal's primary market, accounting for 633 million tons in 1985 and 811 million tons 10 years thereafter, all this in the "moderate growth" picture. By comparison, utilities used 593 million tons in 1982.

The projections see only slight increases in the metallurgical coal market. Consumption of metallurgical coal for steel production is projected to grow to only 48 million tons in 1985, only 7 million tons more than in 1982, and to 51 million tons in 1995. "Slow growth in steel demand, technological improvements and limited coking capacity hold metallurgical coal growth to a lower level than previously forecast," Mr. Brown said.

Sluggish world coal demand and expanded coal export capacity by foreign competitors will limit short-term U.S. export prospects, NCA said.

But the long-term outlook remains promising.

Coal Consumption in 1985

In Millions of Tons

	Stagnation	Moderate Growth	Revitalization
Utilities	633	633	642
Metallurgical	48	48	50
Ind./Retail	76	79	81
Synfuels	—	5	5
Total	757	765	778
U.S. Production	836	852	867

Source NCA

Inco won't boost output to meet increased nickel demand

Inco Ltd. expects a 100 million lb increase in free world nickel demand this year, but the big nickel producer isn't rushing out to meet it with any burst in production.

The company carried a low 83-million-lb inventory into 1984—down 22 pct from a year earlier and the smallest stock in nearly 10 years—but it is sticking to its conservative production schedules.

Earlier this month, Inco scheduled another four-week production shutdown at its Port Colborne, Ont., refinery, beginning June 4. The move, which the company said will be made to balance in-process material flow and will have no visible effect on production, carries right into the previously-scheduled four-week vacation shutdown in July.

Charles F. Baird, chairman, said in the annual report to stockholders that the company expects a 10 pct increase in nickel demand this year. Nickel demand last year was up 125 million lbs to 1.1 billion lbs, the first increase since 1979.

Mr. Baird said price recovery is of more importance to Inco than improved demand. He said the company would have had a net profit last year instead of $234.9 million loss "if prices for Inco products had been at their 1980 levels."

On the other hand, the Inco chairman said because of the increasing impact of cost reduction programs, "we are in a position to return to profitability in 1984 at prices below those for 1980." Nickel prices were at record levels in 1980.

PRICE & PRODUCTION DATA

(Effective March 12, 1984)

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
North East Coast	232	241	239	189
Buffalo	11	11	11	34
Pittsburgh	294	295	298	200
Youngstown	122	124	120	97
Cleveland	129	128	129	119
Detroit	162	164	152	144
Chicago	580	555	547	437
Cincinnati	105	105	99	89
St. Louis	82	77	85	50
Southern	232	224	200	134
Western	83	82	81	73
U.S. Production	2,032	2,006	1,961	1,566

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports. Rail transportation, handling and unloading may be charged to the account of the buyer. Coarse ore 80¢ premium.

Pellets (per iron unit natural).....gross-ton 80.50-86.9*
Mesabi, regular-unscreened .....gross-ton $32.53
Mesabi, non-bessemer.....gross-ton $30.03-31.53**

*80.50¢—Pickands Mather as of 1/27/81.
86.9¢—U. S. Steel as of 3/15/82. Cleveland-Cliffs as of 2/26/82, Oglebay Norton as of 3/25/82, and Hanna Mining as of 2/26/82.
**Effective 8/1/83.

STEEL PRODUCTION, COMPOSITE PRICES

(Effective March 12, 1984)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1984	To Date 1983
Net tons, in thousands	2,032	2,006	19,009	13,542
Capability Utilization Rate	78.6	77.6	73.6	46.7

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 2/13/84)	26.939	26.939	26.939	26.217
Pig Iron** (Net ton=2000 lbs.)	$213.00	$213.00	$213.00	$213.00
Scrap No. 1 hvy.*** (Gross ton=2240 lbs.)	$ 91.50	$ 91.83	$ 95.17	$ 72.83
No. 2 bundles	$ 62.83	$ 62.83	$ 63.17	$ 51.83

Scrap Comparison (Gross Ton)

No. 1 steel, Pittsburgh .	$100.50	$100.50	$103.50	$ 77.50
No. 1 steel, Philadelphia ..	86.50	87.50	91.50	63.50
No. 1 steel, Chicago.....	87.50	87.50	90.50	77.50
No. 1 bundles, Detroit	95.50	95.50	101.50	76.50
Low Phos., Youngstown ..	99.50	99.50	104.50	69.50
No. 1 mach'y cast., Pgh...	79.50	79.50	79.50	79.50
No. 1 mach'y cast., Phila	100.50	100.50	100.50	98.50
No. 1 mach'y cast., Chi..	111.50	111.50	111.50	112.50

*Finished Steel Composite: Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.
**Pig Iron Composite: Based on average prices for basic and foundry pig iron at representative producing points within the U.S.
***Steel Scrap Composite: Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

NONFERROUS PRICES

(Effective March 12, 1984) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum	81.00	76.00-81.00	9/27/83
Copper (C)	70.00-72.00	70.00-70.50	3/9/84
Lead	25.00-28.00	24.00-28.00	3/7/84
Magnesium Ingot	143.00	138.00	1/3/84
Nickel	329.00	350.00	11/25/81
Titanium Sponge	555.00-585.00	555.00	4/29/82
Zinc	51.00-53.00	51.00	3/9/84

ALUMINUM: 99.5%. COPPER (C) = cathode. LEAD: common grade. MAGNESIUM: 99.8% pig. delivered. NICKEL: electro., Port Colborne, Canada. ZINC: high grade.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$215.00
Beryllium-copper, per lb. cont. Be	$130.00
Beryllium 97% powder 200	$178.00
Bismuth, ton lots	$1.65-$1.80
Cadmium, ton lots	$1.50
Calcium, ton lots, crown	$3.50
Chromium, 99.8%	$3.75
Cobalt, 99%, cathode	$12.50
Gold per troy oz.	$395.75
Indium, dollars per troy oz.	$2.43-$2.65
Iridium, dollars per troy oz.	$600
Magnesium sticks, 10,000 lbs.	$1.97
Mercury, per 76-lb. f.o.b. N.Y.	$295-$305
Molybdenum, lb. tech. moly oxides, 20 lb. MO can	$6.85
Nickel oxide sinter at U.S. points of entry	$3.12
Palladium, per troy oz.	$140
Platinum, per troy oz.	$475
Rhodium, per troy oz.	$600.00
Silver ingots, per troy oz.	$9.95
Vanadium	$6.00
Zirconium sponge	$12.00-$17.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb, EX-SMELTER, based on daily market in Penang in Malaysian dollars per kilo.)

March 5—579.60 March 8—575.70
March 6—579.14 March 9—578.61
March 7—577.68

Scrap Prices
Brass Mill Scrap

(Cents per lb; over 20,000 lbs. add 1¢ per lb)

	Solids	Turning
Copper	64⅝	60
Yellow brass	59	57¼
Red brass	61⅜	58½
Comm. bronze	62⅜	59
Mang. bronze	61½	58
Free cutting rod ends	57	56

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	64
No. 2 copper wire	54
Light copper	44

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	60
No. 2 copper wire	50
Light copper	40
No. 1 composition	56
No. 1 comp. turnings	54
Hvy. yellow brass solids	38
Hvy. yellow brass turnings	33
Radiators	46

Aluminum

New mixed clips	51	—52
Old sheet	50	—51
Old cast	50	—51
Clean dry borings	50	—51

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum

Segregated clippings	42	—43
Mixed L.C. clips	37	—38
Old sheets and cast	35	—36
Borings and turnings	26	—27
Duraluminum clippings	28	—29

Copper and Brass

No. 1 copper wire	50	—51
No. 2 copper wire	42	—43
Light copper	37	—38
Radiators	35	—36
No. 1 composition	44	—45
No. 1 composition turn'gs	41	—42
Cocks and faucets	30	—31
Clean heavy yellow brass	27	—28
Brass Pipe	29	—30
New soft brass clippings	44	—45

Lead

Heavy soft lead	9	—10
Whole batteries	3	— 4
Type metal	15	—16
Electrotype	13	—14

Nickel

Nickel solids	110	—120
Nickel rod ends	110	—120
Nickel sheets, clips	110	—120
Nickel turnings	50	— 60

Zinc

New zinc clippings	18	— 19
Old diecast zinc	14	— 15

EFFECTIVE MAR. 12, 1984

(Effective March 12, 1984) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$100.00 to	$101.00
No. 2 hvy. melting	90.00 to	91.00
No. 1 dealer bundles	119.00 to	120.00
No. 1 factory bundles (auto)	125.00 to	126.00
No. 2 bundles	59.00 to	60.00
No. 1 busheling	113.00 to	114.00
Machine shop turn.	16.00 to	17.00
Shoveling turnings	54.00 to	55.00
Cast iron borings	53.00 to	54.00
Low phos. punchings plate	125.00 to	126.00
Heavy turnings	90.00 to	91.00
No. 1 RR hvy. melting	113.00 to	114.00
Rails 2 ft. and under	122.00 to	123.00
Scrap rails, random lgth.	107.00 to	108.00
RR specialties	121.00 to	122.00
No. 1 machinery cast	79.00 to	80.00
Cupola cast	72.00 to	73.00
Heavy breakable cast	30.00 to	31.00
Stainless		
18-8 bundles and solids	590.00 to	600.00
18-8 turnings	490.00 to	500.00

Chicago

No. 1 hvy. melting	$ 87.00 to	$ 88.00
No. 2 hvy. melting	81.00 to	82.00
No. 1 dealer bundles	112.00 to	113.00
No. 1 factory bundles (auto)	115.00 to	116.00
No. 2 dealer bundles	84.00 to	85.00
No. 1 busheling	109.00 to	110.00
Shredder scrap	106.00 to	107.00
Machine shop turn.	49.00 to	50.00
Mixed bor. and turn.	50.00 to	51.00
Shoveling turnings	60.00 to	61.00
Cast iron borings	61.00 to	62.00
Low phos. forge crop	122.00 to	123.00
Low phos. punchings plate ¼ in. and heavier	132.00 to	133.00
Low phos. 2 ft. and under	127.00 to	128.00
No. 1 RR hvy. melting	109.00 to	110.00
Scrap rails, random lgth.	102.00 to	103.00
Reroller rails	112.00 to	113.00
Rails, 2 ft. and under	126.00 to	127.00
RR couplers and knuckles	110.00 to	111.00
RR car axles	134.00 to	135.00
No. 1 machinery cast	111.00 to	112.00
Cupola cast	105.00 to	106.00
Stove plate	106.00 to	107.00
Steel car wheels	119.00 to	120.00
Stainless		
18-8 bundles and solids	550.00 to	560.00
18-8 turnings	450.00 to	460.00
430 bundles and solids	135.00 to	140.00
430 turnings	100.00 to	105.00

Philadelphia

No. 1 hvy. melting	$ 85.00 to	$ 88.00
No. 2 hvy. melting	75.00 to	78.00
No. 1 dealer bundles	102.00 to	105.00
No. 2 dealer bundles	63.00 to	66.00
No. 1 busheling	102.00 to	105.00
Shredder scrap	95.00 to	98.00
Machine shop turn.	29.00 to	32.00
Mixed bor. and turn.	29.00 to	32.00
Shoveling turnings	48.00 to	51.00
Low phos. 5 ft. and under	100.00 to	103.00
Low phos. 2 ft. punchings	117.00 to	120.00
Electric furnace bundles	116.00 to	119.00
RR specialties	102.00 to	105.00
Rails, 2 ft. and under	115.00 to	118.00
Cupola cast	72.00 to	75.00
Heavy breakable cast	60.00 to	63.00
No. 1 machinery cast	99.00 to	102.00

Detroit

Broker buying prices per gross ton on cars:

No. 1 hvy. melting	$ 68.00 to	$ 69.00
No. 2 hvy. melting	66.00 to	66.00
No. 1 dealer bundles	96.00 to	96.00
No. 2 bundles	46.00 to	47.00
No. 1 busheling	94.00 to	95.00
Drop forge flashings	66.00 to	67.00
Machine shop turn.	46.00 to	47.00
Mixed borings and turn.	29.00 to	30.00
Shoveling turnings	47.00 to	48.00
Cast iron borings	49.00 to	50.00
Heavy breakable cast	38.00 to	39.00
Mixed cupola cast	54.00 to	55.00
Automobile cast	77.00 to	78.00
Stainless		
18-8 bundles and solids	460.00 to	470.00
18-8 turnings	360.00 to	370.00
430 bundles and solids	120.00 to	130.00

Youngstown

No. 1 hvy. melting	$ 90.00 to	$ 93.00
No. 2 hvy. melting	72.00 to	75.00
No. 1 dealer bundles	103.00 to	106.00
No. 2 dealer bundles	37.00 to	40.00
Machine shop turn.	14.00 to	17.00
Shoveling turnings	19.00 to	22.00
Low phos. plate	98.00 to	101.00
Electric furnace bundles	91.00 to	94.00
Galvanized bundles	89.00 to	92.00

Cleveland

No. 1 hvy. melting	$ 80.00 to	$ 83.00
No. 2 hvy. melting	50.00 to	53.00
No. 1 dealer bundles	100.00 to	103.00
No. 1 factory bundles	102.00 to	105.00
No. 2 bundles	30.00 to	33.00
No. 1 busheling	99.00 to	102.00
Machine shop turn.	13.00 to	16.00
Mixed bor. and turn.	13.00 to	16.00
Shoveling turnings	15.00 to	18.00
Cast iron borings	18.00 to	21.00
Cut structural & plates, 2 ft. and under	126.00 to	129.00
Low phos. punchings plate	126.00 to	129.00
Drop forge flashings	62.00 to	65.00
Foundry steel, 2 ft. & under	70.00 to	75.00
No. 1 RR hvy melting	87.00 to	90.00
Rails, 2 ft. and under	127.00 to	130.00
Rails, 18 in. and under	128.00 to	131.00
Steel axle turnings	67.00 to	70.00
Railroad cast	100.00 to	103.00
No. 1 machinery cast	107.00 to	110.00
Cupola cast	63.00 to	66.00
Stove plate	48.00 to	51.00
Stainless		
18-8 bundles	375.00 to	385.00
18-8 turnings	325.00 to	335.00
430 bundles	80.00 to	85.00

Buffalo

Broker buying prices per gross ton on cars:

No. 1 hvy. melting	$ 74.00 to	$ 75.00
No. 2 hvy. melting	61.00 to	62.00
No. 1 busheling	89.00 to	90.00
No. 1 dealer bundles	89.00 to	90.00
No. 2 bundles	42.00 to	43.00
Machine shop turn.	15.00 to	16.00
Mixed bor. and turn.	13.00 to	14.00
Shoveling turnings	21.00 to	22.00
Cast iron borings	25.00 to	26.00
Low phos. plate	102.00 to	103.00
Structural and plate, 2 ft. and under	102.00 to	103.00
Rails, 2 ft. and under	97.00 to	98.00
Scrap rails, random lgth.	77.00 to	78.00
No. 1 machinery cast	79.00 to	80.00
No. 1 cupola cast	59.00 to	60.00

St. Louis

No. 1 hvy. melting	$ 82.00 to	$ 83.00
No. 2 hvy. melting	72.00 to	73.00
Foundry steel, 2 ft.	71.00 to	72.00
No. 1 dealer bundles	82.00 to	83.00
No. 2 bundles	70.00 to	71.00
Machine shop turn.	22.00 to	23.00
Shoveling turnings	29.00 to	30.00
Cast iron borings	40.00 to	41.00
No. 1 RR hvy. melting	89.00 to	90.00
Rails, random length	87.00 to	88.00
Rails, 18 in. and under	99.00 to	100.00
RR specialties	97.00 to	98.00
Cupola cast	74.00 to	75.00
Heavy breakable cast	53.00 to	54.00
Stove plate	88.00 to	89.00
Cast iron car wheels	57.00 to	58.00
Rerolling rails	94.00 to	95.00
Unstripped motor blocks	61.00 to	62.00

Birmingham

No. 1 heavy melting	$ 77.00 to	$ 78.00
No. 2 heavy melting	71.00 to	72.00
No. 1 dealer bundles	62.00 to	63.00
No. 2 bundles	57.00 to	58.00
No. 1 busheling	62.00 to	63.00
Shredder scrap	107.00 to	108.00
Machine shop. turn.	41.00 to	42.00
Shoveling turnings	50.00 to	51.00
Cast iron borings	50.00 to	51.00
Electric furnace bundles	75.00 to	76.00
Elec. furnace, 3 ft. & under	80.00 to	81.00
Structural and plate, 2 ft.	111.00 to	112.00
Structural and plate, 4 ft.	105.00 to	106.00
No. 1 RR hvy. melting	105.00 to	106.00
Scrap rails, random lgth.	100.00 to	101.00
Rails, 18 in. and under	112.00 to	113.00
Angles and splice bars	105.00 to	106.00
No. 1 cupola cast	94.00 to	95.00
Unstripped motor blocks	74.00 to	75.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 73.00 to	$ 74.00
No. 2 hvy. melting	67.00 to	68.00
No. 1 dealer bundles	88.00 to	89.00
No. 2 bundles	43.00 to	44.00
Machine shop turn.	13.00 to	14.00
Shoveling turnings	15.00 to	16.00
Cast iron borings	29.00 to	30.00
Low phos. 18 in. and under	107.00 to	108.00
Rails, random length	87.00 to	88.00
Rails, 2 ft. and under	102.00 to	103.00
No. 1 cupola cast	76.00 to	77.00
Heavy breakable cast	39.00 to	40.00
Drop broken cast	92.00 to	93.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 49.00 to	$ 51.00
No. 2 hvy. melting	41.00 to	43.00
No. 2 dealer bundles	23.00 to	27.00
Mixed bor. and turn.	11.00 to	13.00
Machine shop turn.	6.00 to	7.00
Shoveling turnings	14.00 to	15.00
Clean cast. chem. borings	35.00 to	36.00
No. 1 machinery cast	89.00 to	90.00
Mixed yard cast	50.00 to	51.00
Heavy breakable cast	10.00 to	12.00
Stainless		
18-8 prepared solids	500.00 to	520.00
18-8 turnings	400.00 to	420.00
430 prepared solids	90.00 to	110.00
410 solids	80.00 to	90.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 70.00 to	$ 72.00
No. 2 hvy. melting	60.00 to	62.00
No. 1 dealer bundles	75.00 to	77.00
No. 2 bundles	39.00 to	41.00
No. 1 busheling	78.00 to	80.00
Shredder scrap	75.00 to	77.00
Machine shop turn.	14.00 to	16.00
Shoveling turnings	20.00 to	22.00
No. 1 machinery cast	90.00 to	95.00
Mixed cupola cast	48.00 to	50.00
Heavy breakable cast	20.00 to	22.00

San Francisco

No. 1 hvy. melting	$ 48.00 to	$ 50.00
No. 2 hvy. melting	39.00 to	41.00
No. 1 dealer bundles	37.00 to	39.00
No. 2 dealer bundles	19.00 to	21.00
Machine shop turn.	6.00 to	8.00
Cast iron borings	6.00 to	8.00
No. 1 cupola cast	83.00 to	85.00

Los Angeles

No. 1 hvy. melting	$ 52.00 to	$ 54.00
No. 2 hvy. melting	42.00 to	44.00
No. 1 dealer bundles	41.00 to	43.00
No. 2 dealer bundles	21.00 to	23.00
Machine shop turn.	12.00 to	14.00
Shoveling turnings	10.00 to	12.00
Cast iron borings	6.00 to	8.00
Elec. furnace, 1 ft. and under (foundry)	77.00 to	79.00
No. 1 cupola cast	77.00 to	79.00

Seattle

No. 1 hvy. melting	$ 73.00 to	$ 75.00
No. 2 hvy. melting	62.00 to	64.00
No. 2 bundles	44.00 to	46.00
No. 1 cupola cast	98.00 to	100.00
Mixed yard cast	85.00 to	87.00

Hamilton, Ont.

Brokers buying price per net ton on cars:

No. 1 heavy melting	$ 90.00
No. 2 heavy melting cut 2 ft. and under	87.00
No. 1 dealer bundles	87.00
No. 2 bundles	48.00
Mixed steel scrap	59.00
Bush. new fact. prep'd.	95.00
Bush. new fact. unprp'd.	75.00
Machine shop turn.	45.00
Short steel turn.	43.00
Mixed bor. and turn.	30.00
Cast scrap	73.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 85.00 to	$ 86.00
No. 2 hvy. melting	69.00 to	70.00
No. 2 bundles	44.00 to	45.00
Machine shop turn.	20.00 to	21.00
Crushed turnings	45.00 to	46.00
Shredder scrap	85.00 to	86.00
Cut structural plate 2 ft. and under	100.00 to	102.00
Unstripped motor blocks	60.00 to	61.00
Cupola cast	81.00 to	82.00

ORDERS ON TRACK IN JANUARY

Durable goods orders in the first month of 1984 bode well for the economy for the year. Sustaining the health of industry was a big increase in the demand for steel, according to the latest figures from the U.S. Commerce Department.

Some are calling the steel industry's 56.8 pct rise in January over December a "rebound," but the industry still believes it has a long way to go. New orders for steel in the first month of 1984 came to $5.8 billion compared with $3.7 billion in December 1983.

Overall, strong rises in orders for manufactured products in January leads to the belief that the economy is not losing its momentum. New orders for durable goods totaled $100.9 billion, up about 3 pct from the $98.2 billion registered in December. Metal cutting machine tools and household appliances were among those posting gains.

Metalworking machinery new orders in January were up 33 pct—$800 million in January versus $600 million in December. Machine tool orders totaled $191 million, a 26.2 pct increase over December's $151.3 million.

However, within that category metalforming machine tool orders were down 7 pct—$56 million in January compared with $60 million the last month of 1983. Metalcutting machine tool orders were up 47 pct, $135.1 million compared with $91.3 million.

The government's final January figure has been revised upward from a earlier report, which predicted the increase in orders to be 1.1 pct. Part of the upward movement resulted from a much-improved showing in non-defense capital goods. This area, a key indicator of future plans for plant and equipment spending, was up 2 pct in January compared with December.

Several economic observers say the strength of the non-defense category coupled with the upticks in 15 of the 26 categories shown is further evidence that the nation's economic recovery is continuing on track.

Billions of Dollars, Seasonally Adjusted Monthly Total, unless otherwise noted Source: U.S. Dept. of Commerce		Latest Month or Qtr.	Previous Month or Qtr.	Same Period Year Ago
CAPITAL EXPENDITURES (Annual Rates)				
U.S. Industry, Total	4th Qtr.	$321.6	$304.7	$303.2
Manufacturing, Total	4th Qtr.	115.0	111.1	110.2
Manufacturing, Durable Goods	4th Qtr.	53.5	53.0	50.5
Mining Industry	4th Qtr.	13.1	11.9	13.4
KEY INDICATORS, Durable Goods Manufacturing				
New Orders	Jan.	100.9	98.2	80.7
Shipments	Jan.	96.5	97.9	77.0
Inventories	Jan.	177.8	178.0	174.0
Unfilled Orders	Jan.	328.6	323.5	288.8
NEW ORDERS, METALWORKING				
Capital Goods Producers, Nondefense Industries	Jan.	25.4	24.9	20.9
Capital Goods Producers, Defense Industries	Jan.	6.6	8.8	8.6
Primary Metals, Total	Jan.	12.7	10.7	8.3
Steel (SIC 331)	Jan.	5.8	3.7	3.5
Iron & Steel Castings (SIC 332)	Jan.	1.5	1.3	0.8
Nonferrous Metals	Jan.	5.4	5.7	4.0
Nonelectrical Mach.-Equip. Industries, Total	Jan.	16.8	16.5	13.4
Engines & Turbines	Jan.	0.9	1.0	1.0
Farm Machinery & Equipment (Shipments)	Jan.	1.0	1.2	0.9
Construction, Mining & Mat. Hdlg. Equip.	Jan.	2.6	2.8	1.9
General Industrial Machinery	Jan.	1.2	1.3	1.1
Fluid Power Equipment** (Index-1972=100)	Jan.	312.0	248.0	207.0
Metalworking Machinery	Jan.	0.8	0.6	0.7
Machine Tools, Total ($ Mill., Unadjusted)***	Jan.	191.0	151.3	91.9
Machine Tools, Metalcutting***	Jan.	135.1	91.3	57.1
Machine Tools, Metalforming***	Jan.	56.0	60.0	34.8
Electrical Mach. & Equip. Industries, Total	Jan.	15.7	16.0	12.0
Elec. Transmission Equip. & Ind. Apparatus	Jan.	1.8	1.7	1.4
Household Appliances	Jan.	1.6	1.2	1.3
Communication Equipment	Jan.	4.7	5.7	4.0
Transportation Equip. Industrial, Total	Jan.	25.9	25.5	21.7
Motor Vehicles & Parts (Shipments)	Jan.	17.0	15.2	10.4
Aircraft, Missiles & Parts	Jan.	6.8	8.9	8.9
Shipbuilding & Military Tanks	Jan.	0.9	0.2	1.6
Fabricated Metal Products, Total	Jan.	10.9	10.6	9.0
Instruments, Total	Jan.	4.7	4.7	4.0

*Est.—Commerce Dept.; **Source: National Fluid Power Assn.; ***Source: NMTBA.